

**School:** ATEC – Risk Management  
**Course:** Actuarial Process and Uses  
**Faculty:** Vahan Mahdasian, Deputy Managing Director & Actuary, AON

### **Summary**

The course "Actuarial Process and Uses," taught by Vahan Mahdasian of AON, delves into the integral role of actuaries in assessing and managing risk, particularly in workers' compensation. Mahdasian, with over two decades of experience at Aon Global Risk Consulting, emphasizes the blend of mathematical precision and effective communication essential for successful actuarial practice.

*Introduction to Actuarial Science:* Mahdasian begins by defining actuarial science as the application of mathematical and statistical methods to assess risk in insurance, finance, and other industries. He explains the distinction between life actuaries, who primarily work in life, health, disability, and pension sectors, and property/casualty actuaries, like himself, who focus on risks associated with property and casualty, including workers' compensation. He also introduces the governing bodies: the Society of Actuaries for life actuaries and the Casualty Actuarial Society for property/casualty actuaries.

*Actuaries in Workers' Compensation:* The primary function of actuaries in workers' compensation risk management is to quantify exposure to various risks. Mahdasian outlines the tasks they perform, such as providing quantitative analyses to measure clients' risks, evaluating the efficiency of insurance programs, and exploring program alternatives to optimize total cost of risk (TCOR). Key terms in actuarial practice include accident date, paid losses, case reserves, incurred losses, and IBNR (Incurred But Not Reported) losses. He emphasizes the importance of understanding these concepts to grasp the broader scope of actuarial work.

*Actuarial Methods and Analysis:* Mahdasian explains two fundamental types of analyses actuaries perform: loss reserve analysis and loss forecasting. Loss reserve analysis focuses on determining liabilities and the necessary reserves to carry on the balance sheet, while loss forecasting predicts future losses to budget appropriately. He provides detailed examples to illustrate these processes, including the calculation of link ratios and cumulative loss development factors (LDFs). These methodologies help actuaries predict how past loss development patterns might influence future losses.

*Communication and Client Interaction:* Effective communication between actuaries and clients is crucial for accurate risk assessment. Mahdasian highlights the need for regular interaction to incorporate subjective considerations and changes that may impact actuarial analyses. He shares examples of how client-provided information, such as

acquisitions or changes in operations, can significantly alter actuarial predictions. Actuaries must adjust their analyses based on this qualitative data to provide accurate risk assessments.

*Addressing Misunderstandings and Emerging Risks:* Mahdasian addresses common misunderstandings in actuarial practice, such as misconceptions about IBNR and the variability of reserve estimates. He clarifies that IBNR encompasses more than just late-reported claims and that reserve estimates are inherently variable due to numerous influencing factors. He also discusses the importance of using industry data to supplement client-specific data, especially for clients with sparse historical data.

In the final section, Mahdasian touches on the emerging risks actuaries must consider, such as cyber risk, climate risk, and pandemic risk. He underscores the expanding role of actuaries in addressing these new challenges and their importance in various risk management areas, including enterprise risk management and financial institutions risk consulting.

*Conclusion:* Mahdasian concludes by reiterating his passion for actuarial science and the significance of effective communication in this field. He encourages participants to reach out with questions and emphasizes his commitment to helping clients and colleagues understand and manage risks effectively. The presentation provides a comprehensive overview of the actuarial process and its applications in workers' compensation, highlighting the critical blend of technical expertise and client interaction in this profession.

### **Learning Objectives**

1. Understand the fundamental principles of actuarial science and the role of actuaries in risk assessment.
2. Differentiate between life actuaries and property/casualty actuaries and their respective fields of work.
3. Comprehend key actuarial terminologies and their applications in workers' compensation risk management.
4. Analyze actuarial methods for loss reserve analysis and loss forecasting.
5. Recognize the importance of communication between actuaries and clients for accurate risk assessment and management.

### **Primary Takeaways**

1. Actuarial science applies mathematical and statistical methods to assess risk in various industries, primarily insurance and finance.

2. The distinction between life actuaries and property/casualty actuaries lies in their focus areas, with the latter dealing with risks related to property and casualty, including workers' compensation.
3. Key actuarial terms such as paid losses, case reserves, incurred losses, and IBNR (Incurred But Not Reported) are crucial for understanding and managing workers' compensation risks.
4. Actuarial processes involve detailed analyses like loss reserve and loss forecast, which help determine liabilities and future loss expectations.
5. Effective communication between actuaries and clients is essential to account for subjective considerations and changes impacting the actuarial analysis.

### **Course Outline**

- 1) Introduction to Actuarial Science
  - a) Definition and Role of Actuaries
  - b) Overview of Actuarial Fields: Life vs. Property/Casualty
  - c) Governing Bodies and Exam Process
- 2) Actuarial Science in Workers' Compensation
  - a) Role of Actuaries in Workers' Comp Risk Management
  - b) Quantitative Analyses for Measuring Risk
  - c) Key Terminologies in Workers' Compensation
    - i) Paid Losses
    - ii) Case Reserves
    - iii) Incurred Losses
    - iv) IBNR
- 3) Actuarial Methods and Analysis
  - a) Loss Reserve Analysis
    - i) Purpose and Importance
    - ii) Methodology and Calculation
  - b) Loss Forecasting
    - i) Future Loss Predictions
    - ii) Use of Historical Data and Trends
- 4) Communication and Client Interaction
  - a) Importance of Communication with Clients
  - b) Impact of Client Information on Actuarial Analysis
  - c) Addressing Common Misunderstandings and Clarifications

- 5) Emerging Risks and Actuarial Involvement
  - a) Enterprise Risk Management
  - b) Cyber Risk Consulting
  - c) Climate Risk Analytics
  - d) Financial Institutions Risk Consulting
  - e) Pandemic Risk Analysis

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